

GREAT PRODUCTS • INNOVATIVE BUSINESS SOLUTIONS • EXCEPTIONAL CUSTOMER EXPERIENCE

OEM Roundtable – Mainstream Maintenance and Dealer Training for NGVs



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Natural Gas Vehicle Technology Forum

January 15, 2014

Brookhaven National Laboratory

Upton, New York



Owner, Technician and Dealer Information

- ¶ GM CNG Specific Documentation
 - Owner's Manual Supplements
 - Maintenance Schedules
 - First Responder Guides
 - Service Manual Supplements and Special Service Tools
- ¶ GM Service Technician Training
- ¶ GM Facility Requirements / Dealer Equipment
- ¶ Removing End-of-Life Containers from Service
- ¶ Field Feedback – what we focus on
- ¶ Bumps and Curves in the Road Ahead
- ¶ GM CNG Product Offerings





2013 Chevrolet Silverado CNG Owner's Manual Supplement

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Service and Maintenance 11-3

Maintenance Records

Natural Gas Vehicle (CNG) Service Records

Vehicle Identification Number (VIN)

[illegible]

CNG Tank Information

Size	Capacity*	Serial #	Exp. Date
533 mm x 1 327 mm (21 in x 52 in)	210 L (55.5 gal)		
* Total Container Water Volume			

CNG Fuel Tank Inspection Record

Tank Serial Number:			Tank Expiration Date:	
Inspection Interval (Mileage or Years)	Inspection Date	Inspector	Inspector Initials	Type of Repair

Service and Maintenance 11-1

Service and Maintenance

Maintenance Schedule

Maintenance Schedule 11-1

Maintenance Records

Natural Gas Vehicle (CNG)
Service Records 11-3

Maintenance Schedule

⚠ WARNING

The tank shield protects the fuel tank in a crash and from road hazards. Operation with the shield removed may result in tank damage that could result in a rupture or possible explosion of the tank. You or others could be injured or even killed. If you must remove a tank shield for any reason, e.g., tank inspection or vehicle repair, always reinstall the shield before operating the vehicle.

⚠ WARNING

Keeping a CNG fuel tank in service after the tank service expiration date is dangerous and is prohibited by federal law. The tank may no longer withstand the CNG fuel system operating pressure. You could be severely injured or killed. Take the vehicle to an authorized GM dealer to have the tank replaced.

This CNG vehicle is designed for routine maintenance (fluids, filters, etc.) according to the original specifications as provided in the owner manual for gasoline fuel vehicles. See the owner manual for maintenance service intervals and fluid specifications.

11-2 Service and Maintenance

See your dealer or other qualified repair facility for required service and maintenance. Your dealer has the necessary training and parts to repair the vehicle.

In addition, the CNG system requires the following every 60 000 km (36,000 mi) or 36 months, whichever occurs first:

- Visual inspection of the CNG fuel tanks by a CSA International-certified inspector or authorized GM dealer. For more information, see your dealer or visit:

<http://www.csa-international.org>

Have the CNG fuel system and tanks inspected if the vehicle has been involved in a collision or fire. The fuel tanks must be replaced 15 years after manufacture. The expiration date of the fuel tanks is on a label on the fuel tanks. Have an authorized GM dealer replace the fuel tanks. Do not reuse old fuel tanks.

- Replacement of the high pressure CNG filter. See your dealer.

GM Fleet / GM Dealer Service Toolbox

FLEET SERVICE TOOLBOX



Fleet & Commercial
CHEVROLET • BUICK • GMC • CADILLAC

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GM Fleet & Commercial
CHEVROLET • BUICK • GMC • CADILLAC

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TECHLINK

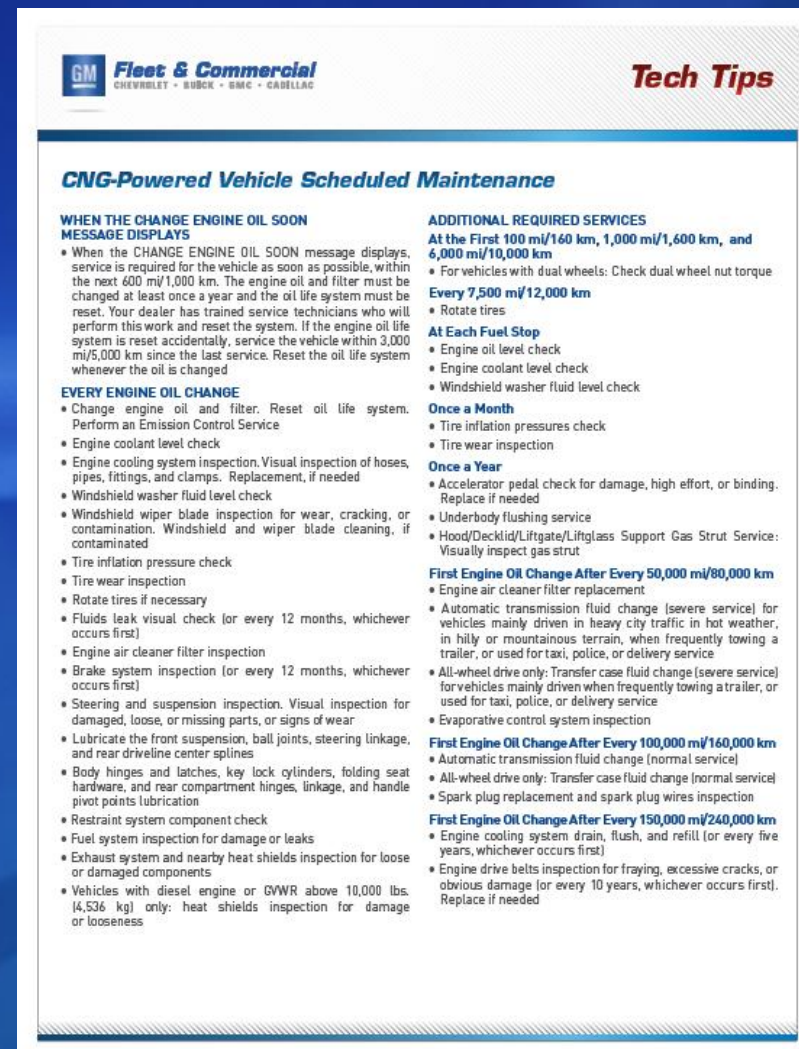


Technical
Assistance
Center



GM Fleet & Commercial Tech Tips

- CNG Vehicle Maintenance Schedules are available on the GM Fleet and Commercial website
- Covers general vehicle maintenance
- Addresses CNG system specific routine maintenance
- Also highlights need to inspect fuel system and tanks if vehicle involved in a collision or fire



The image shows a document titled "GM Fleet & Commercial Tech Tips" with the subtitle "CNG-Powered Vehicle Scheduled Maintenance". The document is organized into several sections with bullet points detailing maintenance schedules. The GM logo and "Fleet & Commercial" text are at the top left, and "Tech Tips" is at the top right. The main title "CNG-Powered Vehicle Scheduled Maintenance" is in a blue box. The sections include: "WHEN THE CHANGE ENGINE OIL SOON MESSAGE DISPLAYS", "EVERY ENGINE OIL CHANGE", "ADDITIONAL REQUIRED SERVICES", "Once a Month", "Once a Year", "First Engine Oil Change After Every 50,000 mi/80,000 km", "First Engine Oil Change After Every 100,000 mi/160,000 km", and "First Engine Oil Change After Every 150,000 mi/240,000 km".

GM Fleet & Commercial
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Tech Tips

CNG-Powered Vehicle Scheduled Maintenance

WHEN THE CHANGE ENGINE OIL SOON MESSAGE DISPLAYS

- When the CHANGE ENGINE OIL SOON message displays, service is required for the vehicle as soon as possible, within the next 600 mi/1,000 km. The engine oil and filter must be changed at least once a year and the oil life system must be reset. Your dealer has trained service technicians who will perform this work and reset the system. If the engine oil life system is reset accidentally, service the vehicle within 3,000 mi/5,000 km since the last service. Reset the oil life system whenever the oil is changed.

EVERY ENGINE OIL CHANGE

- Change engine oil and filter. Reset oil life system. Perform an Emission Control Service.
- Engine coolant level check
- Engine cooling system inspection. Visual inspection of hoses, pipes, fittings, and clamps. Replacement, if needed
- Windshield washer fluid level check
- Windshield wiper blade inspection for wear, cracking, or contamination. Windshield and wiper blade cleaning, if contaminated
- Tire inflation pressure check
- Tire wear inspection
- Rotate tires if necessary
- Fluids leak visual check (or every 12 months, whichever occurs first)
- Engine air cleaner filter inspection
- Brake system inspection (or every 12 months, whichever occurs first)
- Steering and suspension inspection. Visual inspection for damaged, loose, or missing parts, or signs of wear
- Lubricate the front suspension, ball joints, steering linkage, and rear driveline center splines
- Body hinges and latches, key lock cylinders, folding seat hardware, and rear compartment hinges, linkage, and handle pivot points lubrication
- Restraint system component check
- Fuel system inspection for damage or leaks
- Exhaust system and nearby heat shields inspection for loose or damaged components
- Vehicles with diesel engine or GVWR above 10,000 lbs. (4,536 kg) only: heat shields inspection for damage or looseness

ADDITIONAL REQUIRED SERVICES

At the First 100 mi/160 km, 1,000 mi/1,600 km, and 6,000 mi/10,000 km

- For vehicles with dual wheels: Check dual wheel nut torque

Every 7,500 mi/12,000 km

- Rotate tires

At Each Fuel Stop

- Engine oil level check
- Engine coolant level check
- Windshield washer fluid level check

Once a Month

- Tire inflation pressures check
- Tire wear inspection

Once a Year

- Accelerator pedal check for damage, high effort, or binding. Replace if needed
- Underbody flushing service
- Hood/Decklid/Liftgate/Liftglass Support Gas Strut Service: Visually inspect gas strut

First Engine Oil Change After Every 50,000 mi/80,000 km

- Engine air cleaner filter replacement
- Automatic transmission fluid change (severe service) for vehicles mainly driven in heavy city traffic in hot weather, in hilly or mountainous terrain, when frequently towing a trailer, or used for taxi, police, or delivery service
- All-wheel drive only: Transfer case fluid change (severe service) for vehicles mainly driven when frequently towing a trailer, or used for taxi, police, or delivery service
- Evaporative control system inspection


First Engine Oil Change After Every 100,000 mi/160,000 km

- Automatic transmission fluid change (normal service)
- All-wheel drive only: Transfer case fluid change (normal service)
- Spark plug replacement and spark plug wires inspection

First Engine Oil Change After Every 150,000 mi/240,000 km

- Engine cooling system drain, flush, and refill (or every five years, whichever occurs first)
- Engine drive belts inspection for fraying, excessive cracks, or obvious damage (or every 10 years, whichever occurs first). Replace if needed

GM First Responder Guides


Service Technical College

HOME

TRAINING LOCATIONS

ABOUT GM STC

CONTACT US / HELP

SUPPLEMENTAL PROGRAMS

SITE MAP

You are here: **First Responder**

First Responder

In this section, Emergency Personnel Information is provided to assist First Responders in learning about vehicles and/or systems that may affect how they perform in an emergency situation. On the first page of this section, a link to each supported vehicle or system is provided. Each link provides either a First Responder Guide and/or a Quick Reference Sheet. English versions are available for each link, and French-Canadian is now available for several vehicle guides. These guides are intended to help apply existing knowledge of performing extrications safely when responding to a GM vehicle involved in an emergency situation, and are for informational purposes only.

Ex: 2011 Compressed Natural Gas (CNG) Full Size Van – Emergency Responder Guides

<https://www.gmstc.com>

2011 Compressed Natural Gas (CNG) Chevrolet Express and GMC Savana Quick Reference Sheet

Vehicle Identification

The CNG labels on the outside of the vehicle are located:

- on the lower right side of the rear door
- near the vehicle fuel tank door
- within the gas cap door



The CNG labels inside of the vehicle are located on:

- tank covers
- the manual valve



CNG Fuel Tanks

The Savana and Express are equipped with three CNG fuel tanks and an optional fourth tank, which are mounted in the vehicles. Two tanks are located in tandem behind the rear axle. One tank is located under the vehicle between the axles where the gasoline tank is normally positioned. The optional fourth tank is located in the cargo compartment.




GM Service Technical College provides this QR, free of charge to First Responders. This sheet can be displayed in a classroom as long as it is represented as GM information and is not modified in any way. GM's First Responder Guides are available at www.gmstc.com. For information regarding modification of GM's First Responder Information for other uses, contact GM's Licensing Manager at: GM Licensing Program Headquarters • 3773 Bearcreek Ct. • Warren, MI 48092 • Attn: Licensing Coordinator

CNG Fuel System Leak


If a fuel leak is suspected in the engine compartment, ensure the ignition key is turned to the OFF position. The 14 turn isolation valve should be turned to the OFF position in order to stop the flow of fuel to the engine compartment. The 14 turn isolation valve is located under the vehicle, midway between the front and rear tires on the inside of the driver side frame. To turn off the valve, turn the lever 14 turn clockwise.

WARNING: Do NOT try to stop a leak by over-tightening any fitting, this will result in damage to the fitting, which may cause injury.



Disabling 12 Volt Power

Disabling 12 volt power is essential to ensure personal safety even if the airbags in the vehicle appear to have been deployed. After disabling 12 volt power, wait at least 1 minute to allow any un-deployed air bag reserve energy to dissipate.

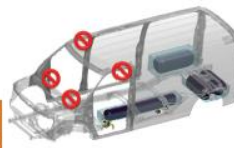


Vehicle DO NOT CUT ZONES

Do NOT cut the following areas of the vehicle which contain airbag modules:

- steering wheel
- front instrument panel, passenger side
- roof rails, front left and right sides
- roof rails, right rear

WARNING: Do NOT cut into the vehicle until the 12 volt electrical system has been disabled. Cutting into the vehicle prior to disconnecting and isolating the 12 volt electrical energy sources may cause air bag deployment resulting in serious injury.



First Responder Considerations

Fire

The CNG fuel within the CNG tanks is flammable. Natural gas only becomes flammable when CNG concentrations are between 5-15% natural gas and oxygen. In the case of a natural gas fire, stop the fuel flow. If any secondary fires emerge, extinguish natural gas flames using a carbon dioxide or dry chemical fire extinguisher.



- 1
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Quick Guide (2 pages)

Detailed Guide (14 pages)

GM Service Manuals



Service and Owner Information

> Chevrolet & Geo > 2006 > Silverado > Shop/Service Information

2006 GMC Sierra And Silverado Alternate Fuel Supplement

Price: \$10.00

In Stock

Qty:



Pkg Qty:

1

Media:

Paper

Language:

English

Item/Part #: GMT06CK8AF1

Models and Years Covered

Contains Factory Authorized Service information written by General Motors. It contains Diagnostic Information and Procedures, Schematics and Routing Diagrams, Component Locator, Repair Instructions, Description and Operation, Specifications, and Special Tools and equipment. Service information on HVAC, Body & Accessories, Restraints, Steering, Suspension, Driveline/Axle, Brakes, Engine and Transmission/Transaxle.

Note: GM Truck Owners, for model years 1996 and prior the service manual is available as a set (or kit) and also sold in sections (electrical & emissions, shop/service manual, unit repair/chassis manual). All three sections are needed for full coverage.

Description:

Instructions and procedures for routine repair adjustments maintenance work diagnosis/testing and removal/installation of parts for various vehicle systems.



<http://www.helminc.com/helm/homepage.asp?Style=helm>

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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VOLUNTARY
TECHNICIAN
CERTIFICATION

GM Special Tools

The screenshot shows the GM Special Service Tools website. The header includes the GM logo, navigation links (HOME, HOW TO ORDER, WARRANTY, ORDER FORM, CONTACT US), a U.S. PRICING POLICY link, and language options (English, Français). The main banner features a car and the text "SERVICE READINESS". Below this, there's a section for "PICKS & PROBES" with a "Popular GM Kits, Limited Time Offer!" and a "View Promo Now >" link. The left sidebar contains links for "ORDER ITEMS", "PROMOTIONS", "NEWS & INFORMATION", and "HYBRID TOOL INFO". The main content area lists various tools with their part numbers and descriptions:

Part Number	Description
J-45879	cng Vent Valve
J-45878	cng Leak Detector
J-45529	cng Tank Sling
J-45397	cng TANK LIFTING KIT
J-44244	cng TANK SUPPORT HARNESS
J-43133	cng TANK REMOVER
J-42435-B	cng Tank Venting Kit
J-42435-A	cng TANK VENTING KIT
J-42435-20	cng VENT HARNESS EXTENSION
J-42309-A	cng TANK SLING
J-39970	cng ELECTRONIC PRESSURE GAUGE

Available for purchase



Special Tool Requirements:
CH-48027 - Digital Pressure Gauge.
GM dealers should already have this tool. This tool can be ordered by calling 1-800-GMTOOLS.

Parts Availability:
All parts are available through normal Customer Care and Aftersales ordering procedures.

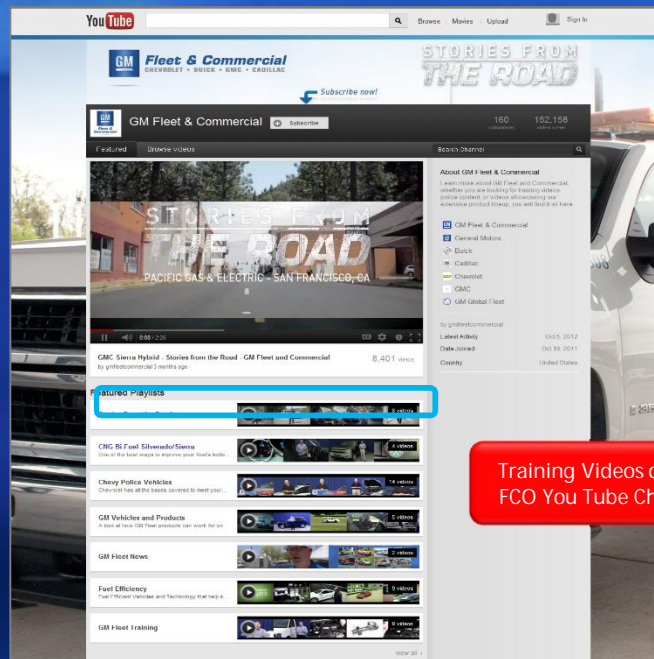
GM Service Technician Training

2013 STC Course Catalog

Supplemental Courses (enrichment)

16040.02T1	OBD II	T
16040.10	Engine Performance Issues	V
16042.10	Enhanced Vehicle Emissions Testing & Diagnostics	B H
16240.61T1	Type 4 CNG Tanks & Inspection	T
16240.65	LPG Fuel Systems	W
16240.62	CNG Fuel Systems	W
16440.16	Engines: New & Updates for RPOs LUU, LUJ, LUW	D
16240.70	Bi-Fuel Systems Operation	W

W = One Part WBT, H = Hands-On, V = Video, B = Booklet



Youtube.com/gmfleetcommercial



Aftersales Support



- CNG and LPG training is available to all Chevrolet and GMC dealers
- Bi-fuel CNG training will be available in Q4, 2012.
- GM Service Part Numbers
- Technical Assistance (TAC)
- Tech 2 compatible
 - Same as Gasoline
 - No new DTC's
- Owner Information Supplement for all gaseous vehicles



CNG SERVICE TRAINING AT GM DEALERSHIPS

- 6,224 GM technicians have been trained to service CNG vans
- 5,197 GM technicians have been trained to service bi-fuel trucks
- The only training required is bi-fuel training and each technician has until the end of 2013 to finish that training



GREAT PRODUCTS • INNOVATIVE BUSINESS SOLUTIONS • EXCEPTIONAL CUSTOMER EXPERIENCE



GM Dealer Equipment

GM

Dealer
Equipment

Air Conditioning
Battery Service
Brake Service
Car Wash and Detail Systems
Cleaning and Maintenance
Compressed Air Systems
Diagnostic Tools
Diesel Exhaust Fluid
Electric Vehicle Charging
Exhaust Extraction
Express Service Supplies
Facility Items
Fluid And Lube Handling
Frame and Measuring Systems
General Shop
Key Service
Lighting Systems
Paint And Refinishing
Parts Department Systems
PC & IT Hardware
Power Tools
Shop Supplies
Tire And Wheel Service
Tool Storage And Workbenches
Vehicle Lifts
Welding
Wheel Alignment

Diagnostic Solutions
for all your service needs!

Tech 2

32mb PCMCIA Card

CANdi Module

MDI

GO GREEN
Environmentally Friendly Products

Make your facility more environmentally friendly!

- A/C Recovery/Recycling Equipment
- Car Wash with Water Reclaim System
- Energy Conservative Outdoor Lot Lighting
- EnviroLube™ (modular fiberglass replacement for traditional concrete pits)
- Inground Lifts
- Oil Filter Crushers
- Paint Booths
- Parts Cleaning Systems (Aqueous-based)
- Wheel Balancers

Expert Service Equipment & Systems Planning...

At No Cost to You!



FOUR Easy Steps:

- 1 Detailed CAD Drawing**
Includes detailed equipment and systems layout to service area as well as a lighting plan with photometric data.
- 2 Equipment & Systems Needs Assessment**
Key project document detailing critical information, target launch/phase dates, building requirements and recommended shop equipment to enhance shop operations.
- 3 Detailed Specifications & Budget**
Includes detailed specifications for all major equipment called out in the Needs Assessment. Also includes a preliminary equipment & systems budget.
- 4 Project Coordination & Support**
Single point of contact for service equipment and installation.

Most architects and contractors don't understand the needs of a service facility—we do!

Equipment and Systems Planning team members know service areas need to be set up to provide an optimal flow of people, equipment and vehicles into and out of the area. Because of our close partnership with the OEM, we know the GM approved equipment—where to place it for the best usage and work flow throughout the shop and how to get it installed. **We are the experts!**

Call today to speak with an Equipment & Systems Planning Specialist!

1-800-GM-TOOLS

Let our experts make sure your facility:

- Accommodates Future Vehicles
- Provides Layout Efficiency
- Maximizes Shop Throughput

Special lease programs available for new facilities. Lease rates will vary. Please call for details.

GM

Dealer
Equipment

GMDEolutions.com



GM Service Facility Requirements

- ¶ GM does not require any special facility requirements to service CNG vehicles
- ¶ GM advises the dealers through service procedures that when relieving fuel line pressure or evacuating a tank, it is to be done outside the building, per NFPA 52 Vehicular Gaseous Fuel Systems Code
- ¶ All dealers are advised to discuss state and local requirements, if any, with local authorities.

Removing CNG containers from service

Fuel Tank Replacement (Pickup with Type 4 Tank)

Tools Required

[J 45529](#) Tank Removal Tool

Removal Procedure

1. Perform the [High Pressure Lock-Off Solenoid Replacement](#) instead of this procedure if the tank is being removed for any of the following reasons:

- High pressure lock-off (HPL) solenoid replacement
- Type 4 fuel tank pressure relief device (PRD) replacement
- CNG fuel tank replacement

2. If the tank is being removed in order to perform non-CNG related repair to the vehicle,

- Transportation of a pressurized CNG fuel tank is prohibited by law. The CNG fuel tank must be properly restrained outside of the vehicle.
- Storing a pressurized CNG fuel tank outside of the vehicle may be prohibited. Consult local regulations.
- Operate the vehicle on CNG until the fuel tank pressure has dropped below 3.447 bar (50 psi).
- The pressurized CNG fuel tank must be properly restrained outside of the vehicle and move to a secure area.
- Attach a tag or label to the HPL solenoid indicating that the CNG fuel tank is present.
- Protect the tank from ultra-violet (UV) radiation and physical damage while removed.
- Inspect any CNG fuel tank that has been removed from the vehicle for damage prior to disposal.

3. Relieve the CNG fuel system line pressure. Refer to [Fuel Pressure Relief](#).

Caution: Refer to [Battery Disconnect Caution](#).

4. Disconnect the negative battery cable. Refer to [Battery Negative Cable Disconnection](#).

2005/6 GMT 800 Pickup Truck
with Type 4 tank

Fuel Tank Replacement (Rear)

Tools Required

- [J 41416](#) Ultrasonic Leak Detector
- [J 45038](#) CNG Tank Lifting Fixture
- [J 45529](#) CNG Tank Lifting Bar

Removal Procedure

1. Relieve the CNG fuel system pressure.

Caution: Refer to [Battery Disconnect Caution](#).

2. Disconnect the negative battery cable.

3. Remove the fuel tank vent hose.

4. Vent the CNG fuel from the tank.

5. Disconnect the electrical wiring.

Fuel Tank Replacement (Front)

Removal Procedure

Tools Required

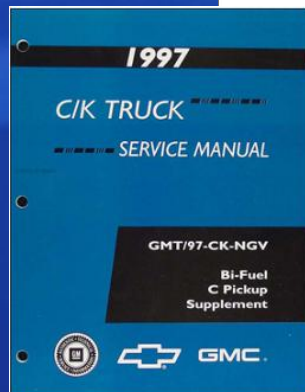
- [J 43133](#) CNG Tank Remover
- [J 45529](#) CNG Tank Sling
- [J 41416](#) Ultrasonic Leak Detector

2001 Chevrolet Express Van
with Type 1 tanks

1998 Chevrolet Cavalier with
Type 2 tank



HPL crowsfoot
J-43602



Fuel Tank Inspection

Removing From Service

- The CNG fuel tank has a fifteen year service life from the date of manufacture.
- The CNG tank manufacture date appears on a label on the tank.
- The tank expiration date is on the CNG Fuel Only label and the Bi-fuel Information label.
- Any tank in service for fifteen years or more must be removed from service using the following procedure:

5.1 Remove the tank. [Refer to Fuel Tank Replacement](#).

5.2 Vent the tank. [Refer to Fuel Tank Venting](#).

5.3 Disconnect the vent hose.

5.4 Allow the tank to stand for 24 hours with the manual valve opening tool installed.

5.5 Place the tank outside in a well ventilated area.

5.6 Drill a 1/4-inch hole after the last digit of the tank identification number stamped into the valve end of the tank.

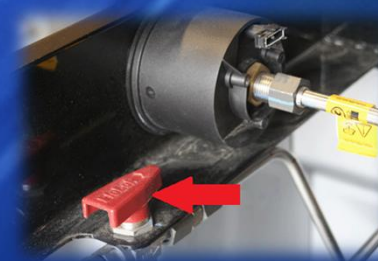
5.7 Dispose of the tank in a safe and approved manner.

© 2012 General Motors. All rights reserved.

- ¶ “Early” GM CNG vehicles have reached, or are approaching, the 15 year life for CNG tanks.
- ¶ Tanks must be removed from service in accordance with FMVSS 304 labeling and NFPA 52 requirements and disposed per service procedures (i.e. drill holes in tank to prevent reuse).
- ¶ GM recommends retail customers take their vehicle to the nearest authorized GM dealer for service. Fleets may be provided with GM training to perform their own maintenance.

Field Feedback – Things that keep us focused on customer satisfaction....

- ¶ FMVSS / EPA / CARB voluntary recalls campaigns
- ¶ GM factory authorized repairs - inside/outside warranty period
- ¶ GM service bulletins – field feedback / discoveries
- ¶ GM standard service, diagnostic , repair procedures and long term spare part availability
- ¶ Non-factory CNG conversions – guidance or repairs?
- ¶ Non-factory accessories / alterations – guidance or repairs?
- ¶ Voice of the Customer - Feedback



Bumps and Curves in the road Ahead – Opportunities

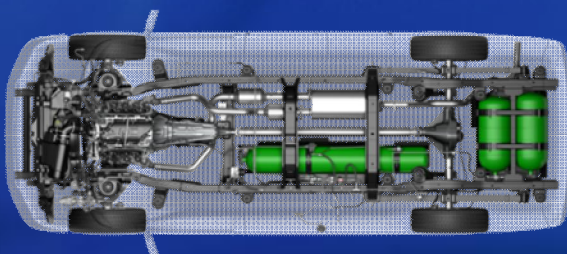
- ¶ Roads Under Construction / Maintenance and Service required ?
- ¶ Identify areas of new or revised Codes and Standards and potential areas for additional Research / Development - data driven
- ¶ Challenge for all service providers to address potential field / voice of the customer feedback based on refueling accuracy, fuel quality, safety perceptions, “life of vehicle” experiences
- ¶ Challenge for service providers to determine individual requirements.
 - Does the NGV vehicle “integrate” well in the dealer maintenance facilities?
 - Potential additional specific facilities, work place practices, etc.
 - Compilation of national, state and local codes and standards based on specific requirements
- ¶ Education across all users and service providers – Customer, Fleet, Dealer, First / Second Responders, Technicians.



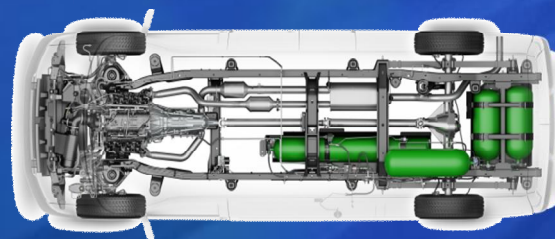
2500 HD / 3500 HD Full Size Van Dedicated CNG Van Offerings – 6.0L



$\frac{3}{4}$ Ton and 1 Ton 135" and 155" Wheelbase Cargo



16 gge 3 tank or
23 gge 4 tank
configurations



Taking orders for 2014 with shipment of our
Chevrolet Express and GMC Savana CNG
Passenger and Cargo Vans now



2500HD Extended Cab and Crew Cab Pick-up Truck Bi-fuel CNG – 6.0L (LC8)

Chevrolet Silverado and GMC Sierra
Available with long or short bed
Available in both 2WD and 4WD



Taking orders for 2014 with shipment of our new
CNG Silverado and Sierra Pick-up Trucks now





2015 Chevrolet Impala Bi-fuel CNG

- ¶ 3.6L V6 (LFR)
 - ¶ Port Fuel Injection
 - ¶ DOHC with Variable Valve Timing
 - ¶ Naturally aspirated
- ¶ Horsepower/torque (lb.-ft.)
 - ¶ 230/218 (CNG)
 - ¶ 260/247 (gasoline)

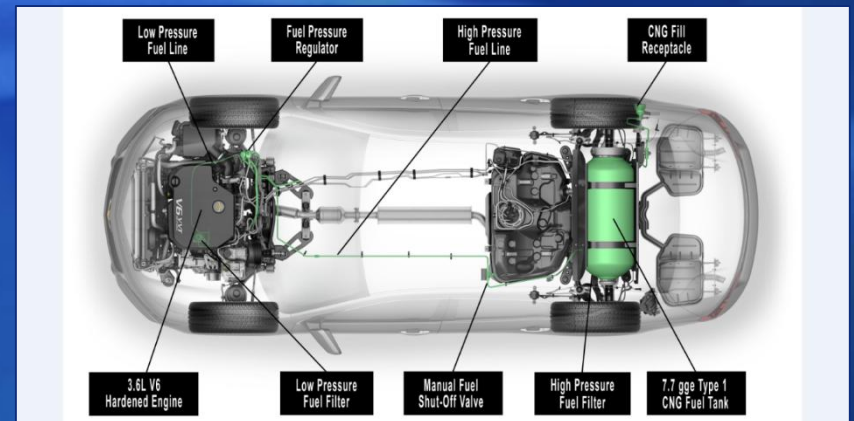
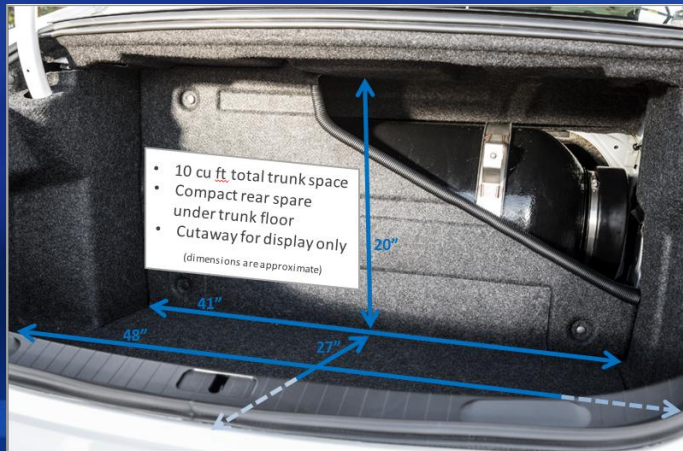


- ¶ Front Wheel Drive
- ¶ 6 Speed Automatic Transmission
- ¶ EPA- and CARB-certified emissions
- ¶ Quantum Technologies is Tier 1 supplier for the CNG fuel system integration



2015 Chevrolet Impala Bi-fuel CNG

- 7.7 gasoline-gallon equivalent (GGE)
10 cu. ft. of cargo volume (18.8 cu. ft. for non-CNG version)
Retains compact spare tire under trunk floor
- Estimated maximum range (miles)*
150 (CNG)
350 (gasoline)
500 (combined)
- CNG fill receptacle conveniently located within gasoline fuel filler door



Ordering Information

- Fleet and retail ordering begins March 2014
- Production begins summer 2014 as a 2015 model
- Available in specific Fleet and LT trim levels
- CNG option price not yet determined



Six Things We Need to Get Right

- ¶ Market analysis
- ¶ Technical features
- ¶ Customer experience
- ¶ Public education
- ¶ Public policy
- ¶ Advanced features and new opportunities



Customer Experience ... Canadian Tire ICE Truck

We are constantly reminded how our customers have
interesting perspective on how to use their vehicle of choice...

2500 GMC Pickup



Source: Canadian Tire



Stay warm and ICE free!



It is not what we know
that is important, it is what
we do not know.

– Charles Kettering

29 Aug 1876 - 25 Nov 1958

Everything
BEGINS & ENDS with
GREAT PRODUCTS

